



Janet Napolitano  
Governor

# ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Stephen A. Owens  
Director

## Assessment of Qualification for Treatment under the Arizona Natural and Exceptional Events Policy for the High Particulate (PM<sub>10</sub>) Concentration Events in the Yuma Area on January 5, 2007

### Background

The Arizona Department of Environmental Quality (ADEQ) issues Dust Control Action Forecasts for the Yuma and Phoenix areas as part of the Natural Events Action Plan for these areas. On Thursday January 4, 2007, in response to an approaching low pressure system forecast to pass through the state of Arizona, ADEQ air quality forecasters issued the Yuma and Vicinity Dust Control Action Forecast which called for a high risk of wind-blown dust for Friday January 5th. The forecast called for strong down-river winds with the passing of a strong trough of low pressure. Wind speeds of 15-25 mph were expected early, with 25-35 mph sustained winds in the afternoon and the potential for gusts up to 50 mph. The forecasts/advisories satisfy the requirement in 40 CFR 51.920(a)(1).

This potential high wind event equated to a high risk of exceeding the PM<sub>10</sub> National Ambient Air Quality Standards (NAAQS) in the Yuma area on January 5th. Strong winds were observed in areas adjacent to the Colorado River with the passing of a cold front beginning in the mid-morning and continuing throughout the remainder of the day on January 5, 2007. The initialization of the high wind event is evident in both the National Weather Service (NWS) and Arizona Meteorological Network (AZMET) monitors. The NWS monitor at Yuma reported significant sustained winds greater than 20 mph with wind gusts consistently above 30 mph and as high as 37 mph, while the Yuma AZMET station recorded similar gusts. In addition to this, the Yuma Marine Corps Air

Station (MCAS) NWS site reported six hours of blowing dust starting at 7:00 p.m. and continuing through midnight. Other nearby stations, which may be considered as representative of the local meteorological conditions west of Yuma in California, also reported strong and gusty winds. Imperial, CA reported strong gusty winds as well as reduced visibility and haze from 10:00 a.m. through 3:00 p.m. and El Centro, CA reported reduced visibility, haze, and blowing dust during the same period (see attachments). All appropriate state implementation plan (SIP) control measures were in place during the event demonstrating, per 40 CFR 50.1(j), that the event "is not reasonably controllable or preventable."

The event brought significant wind and elevated ambient concentrations of PM<sub>10</sub> that exceeded the NAAQS at the Yuma Supersite and Mexico Supersite monitors operated by ADEQ. The fact that ambient concentrations exceed the NAAQS satisfies the criteria in 40 CFR 50.1(j) that the event "affects air quality." While elevated PM<sub>10</sub> concentrations also occurred at the Yuma Courthouse site, the PM<sub>10</sub> NAAQS was not exceeded, and thus no flag is being issued for the Yuma Courthouse monitor. The reason for the discrepancies between the Yuma Courthouse and Yuma Supersite data are not fully understood, but one possible explanation is given in section 3.

The following are the key PM<sub>10</sub> monitor readings for the monitors examined in this report:

Monitor (Operator/Type)	AQS ID*	24-hr Avg PM <sub>10</sub>	1-hr Max PM <sub>10</sub>	Time of Max 1-hr	Flag***
<b>YUMA AREA</b>					
<b>Yuma Courthouse (ADEQ/BAM)</b>	<b>04-027-0004*</b>	<b>139</b>	<b>511</b>	<b>0500</b>	<b>None</b>
<b>Yuma Supersite (ADEQ/BAM)</b>	<b>04-027-8011*</b>	<b>291</b>	<b>1000**</b>	<b>2100</b>	<b>A or RJ</b>
<b>Mexico Supersite (ADEQ/BAM)</b>	<b>80-026-8012*</b>	<b>352</b>	<b>889</b>	<b>2300</b>	<b>A or RJ</b>

\* EPA Air Quality System Identification Number

\*\* Upper range of instrument. Actual PM<sub>10</sub> concentrations likely exceeded recorded value

\*\*\* 24-hr PM<sub>10</sub> concentration influenced by natural or exceptional event to be flagged.

Type Abbreviations: BAM – Beta-Attenuation Mass Monitor (Continuous monitor)

The preliminary findings from this analysis were presented at a stakeholders meeting on November 13, 2007, and were made available for public review during a comment period that ended November 30, 2007. During that time, no comments were received from the public. ADEQ presented and discussed this final demonstration at a stakeholder

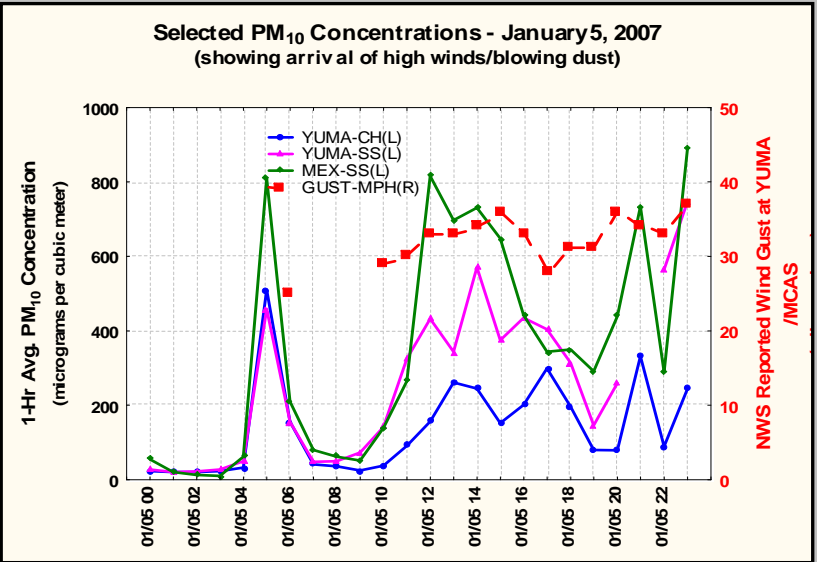
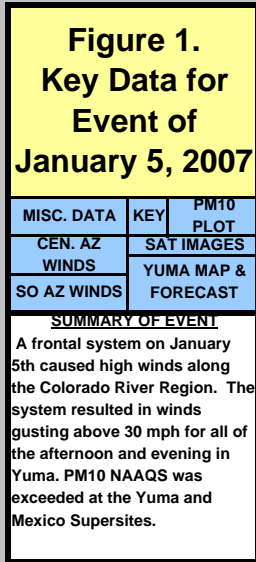
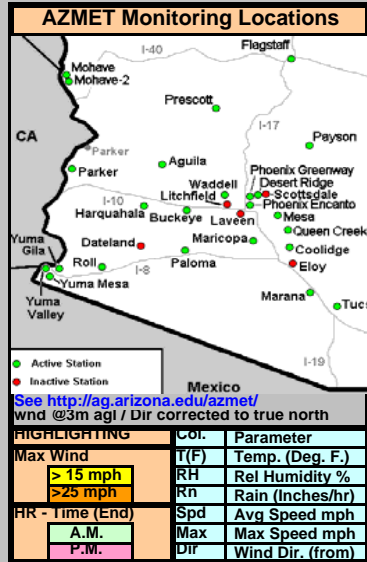
meeting on May 28, 2008. ADEQ has finalized this demonstration, which was made available for public comment from August 11, 2008, through September 10, 2008. Any comments that were received were forwarded to EPA with this demonstration pursuant to 40 CFR 51.14(c)(3)(i).

NWS-Imperial, CA							
Hr	T(F)	VR	Dust	Spd	Gust	Dir	
1	62	10		24	32	SW	
2	59	10		20	28	W	
3	58	10		16	22	W	
4	56	10		20	25	W	
5	53	10		13	23	W	
6	53	10		11	11	NW	
7	55	10		9	9	NW	
8	56	10		11	11	W	
9	60	10		11	18	NW	
10	61	5	HZ	25	36	N	
11	63	2	HZ	25	43	N	
12	63	2	RA	31	40	N	
1	63	1	HZ	32	43	N	
2	63	3	HZ	23	44	NW	
3	62	8		26	36	NW	
4	60	10		17	30	NW	
5	56	10		14	14	NW	
6	54	10		14	14	NW	
7	54	10		16	23	NW	
8	52	10		15	21	NW	
9	52	10		13	21	NW	
10	51	10		10	10	N	
11	50	10		8	8	NW	
12	50	10		9	18	NW	

NWS-EI Centro, CA							
Hr	T(F)	VR	Dust	Spd	Gust	Dir	
1	61	10		24	28	SW	
2	59	8		30	39	W	
3	57	10		15	15	W	
4	56	10		22	28	W	
5	53	10		14	14	W	
6	53	10		10	10	W	
7	54	10		11	11	W	
8	54	10		8	8	NW	
9	61	10		15	15	N	
10	62	7		30	37	N	
11	63	3	BLDU	28	34	N	
12	63	3	HZ	30	39	N	
1	63	0.25	BLDU	34	43	N	
2	63	3	HZ	34	41	N	
3	62	6	HZ	30	37	N	
4	60	8		24	38	N	
5	57	10		23	23	NW	
6	54	10		17	17	NW	
7	52	10		13	13	NW	
8	53	10		23	30	NW	
9	51	10		17	17	NW	
10	50	10		11	11	NW	
11	50	10		13	13	NW	
12	50	10		20	24	N	

NWS-Yuma MCAS							
Hr	T(F)	VR	Dust	Spd	Gust	Dir	
1	52	10		6	6	SE	
2	50	10		5	5	S	
3	51	9		3	3	S	
4	52	10		3	3	VR	
5	53	10		10	10	W	
6	56	5		22	22	NW	
7	53	10		17	25	W	
8	52	10		7	7	W	
9	52	10		11	11	NW	
10	57	10		7	7	NW	
11	60	10		22	29	N	
12	62	10		22	30	N	
1	63	10		26	33	N	
2	64	10		25	33	N	
3	64	10		26	34	N	
4	63	10		29	36	N	
5	61	7		22	33	NW	
6	59	9		23	28	N	
7	57	10	BLDU	23	31	N	
8	55	10	BLDU	21	31	N	
9	54	10	BLDU	29	36	N	
10	53	9	BLDU	25	34	N	
11	53	4	BLDU	22	33	N	
12	52	8	BLDU	31	37	N	

Event Contrib. Analysis					Hourly PM <sub>10</sub> Conc. (µg/m <sup>3</sup> )			
MONITORS:					Hr	1	2	3
1-YUMA SS					1	27	23	55
2-YUMA CH					2	20	21	21
3-MEX SS					3	22	20	13
24-Hr. Avg PM <sub>10</sub>					4	27	23	10
Monitor:					5	50	33	62
with Event					6	459	511	810
w/o Event					7	155	155	210
1-YUMA SS					8	46	41	80
2-YUMA CH					9	50	36	62
3-MEX SS					10	73	25	51
> NAAQS					11	142	38	139
Pink=Event Contrib.					12	325	91	265
Conclusion: As shown above, the PM <sub>10</sub> concentration would have been below the NAAQS "BUT FOR" the event (hours highlighted in pink).					1	432	156	816
					2	344	261	697
					3	571	245	731
					4	375	152	648
					5	435	201	442
					6	404	299	344
					7	314	196	350
					8	146	80	291
					9	259	79	439
					10	1000	332	734
					11	565	89	289
					12	747	244	889



PARKER							
Hr	T(F)	RH	Rn	Spd	Max	Dir	
1	55	62	-	13	21	S	
2	56	54	-	9	16	SW	
3	57	48	-	13	27	W	
4	56	52	-	16	25	NW	
5	55	41	-	20	29	NW	
6	54	35	-	25	35	NW	
7	53	39	-	20	28	NW	
8	51	46	-	16	26	NW	
9	50	51	-	15	24	NW	
10	55	40	-	17	28	NW	
11	59	29	-	24	33	NW	
12	60	25	-	26	36	NW	
1	62	20	-	24	34	N	
2	62	18	-	23	31	N	
3	61	17	-	28	40	N	
4	60	17	-	24	35	N	
5	58	18	-	25	36	N	
6	55	19	-	24	35	N	
7	53	19	-	20	28	N	
8	51	20	-	19	28	N	
9	51	20	-	17	26	N	
10	50	21	-	21	30	N	
11	49	21	-	17	26	N	
12	48	22	-	14	22	N	

MARICOPA							
Hr	T(F)	RH	Rn	Spd	Max	Dir	
1	44	63	-	5	7	S	
2	42	68	-	2	5	SW	
3	42	68	-	2	6	SE	
4	44	63	-	2	4	E	
5	44	64	-	3	7	SE	
6	44	67	-	4	9	S	
7	52	63	-	7	16	W	
8	55	68	-	7	14	W	
9	51	84	-	9	16	W	
10	50	75	-	10	15	W	
11	52	61	-	9	17	W	
12	55	51	-	11	17	W	
1	56	45	-	11	17	W	
2	59	39	-	12	18	W	
3	60	36	-	10	17	W	
4	60	35	-	9	18	W	
5	60	33	-	9	17	NW	
6	58	33	-	10	17	NW	
7	56	33	-	8	13	W	
8	55	31	-	9	14	W	
9	53	54	-	16	23	N	
10	50	60	-	14	21	NE	
11	48	67	-	7	12	NE	
12	46	70	-	4	8	N	

COOLIDGE							
Hr	T(F)	RH	Rn	Spd	Max	Dir	
1	42	70	-	5	7	SE	
2	42	70	-	5	8	S	
3	42	70	-	3	6	E	
4	42	67	-	5	7	SE	
5	40	76	-	2	7	SE	
6	39	77	-	3	7	E	
7	40	78	-	5	7	S	
8	47	71	-	5	9	SW	
9	52	74	-	10	17	W	
10	51	84	-	13	18	W	
11	51	82	-	9	15	W	
12	51	74	-	6	12	SW	
1	53	65	-	7	15	W	
2	55	57	-	11	17	W	
3	58	43	-	11	19	W	
4	57	41	-	8	16	W	
5	57	40	-	4	9	NW	
6	56	48	-	5	13	SE	
7	52	70	-	8	12	S	
8	51	70	-	7	12	S	
9	50	66	-	3	9	E	
10	48	69	-	19	27	NE	
11	47	70	-	10	17	NE	
12	47	77	-	6	9	NE	

Historical Distribution					5-Yr. Dist. of Values (µg/m <sup>3</sup> )			
MONITORS:					Column Index			
1-YUMA SS					Yr - All Data (5-Yrs)			
2-YUMA CH					Sea - Data for Winter season only (5-Yrs)			
3-MEX SS								
Cum. Freq.	Mon 1	Mon 2	Mon 3	Mon 4	Mon 5	Mon 6	Mon 7	Mon 8
Min	8	17	8	10	13	53		
0.5%	13	18	12	12	29	57		

## Assessment under the Technical Criteria Document (TCD)

1. Properly qualify and validate the air quality measurement to be flagged. As this was not a filter sampling date (1-in-6 run day), only data from the continuous analyzers were examined. The air quality monitoring data were reviewed by the agency responsible for operation of the monitor. All hourly PM<sub>10</sub> readings from Yuma Courthouse, Mexico Supersite, and Yuma Supersite were valid. Audits of the analyzers revealed operations were within acceptable tolerance. No local sources were reported as significantly contributing to the air quality episode.

2. Review suspected contributing sources. The AzMET and NWS surface data for the Yuma, El Centro, CA and Imperial, CA stations provide a good explanation as to what meteorological conditions were in place on January 5, 2007, in southwestern Arizona. Strong, northerly winds were occurring along the Colorado River Corridor as can be seen in the AzMET stations on the left side of Figure 1. Near Yuma, these strong winds allowed for dry and loose soils to be easily picked up and transported. Haze reports at Imperial, CA and blowing dust reports at the El Centro NWS station west of Yuma in California, which occurred at a time coincident with the strong wind gusts in and around the Yuma area, are proof that strong winds capable of picking up and transporting dust were occurring in the area. The NWS Yuma MCAS reported blowing dust from 7 p.m. through midnight on January 5<sup>th</sup>. The plot of hourly PM<sub>10</sub> concentration data in the upper right corner of Figure 1, in conjunction with the wind data, confirms the identical timing of the wind and elevated PM<sub>10</sub> concentrations. Finally, high winds and reduced visibility reported at the Yuma MCAS station was coincident with elevated PM<sub>10</sub> concentrations at the Yuma and Mexico Supersites.

3. Examine all air quality monitoring information. Data from all monitors in the network were reviewed. Monitors from the affected areas are summarized in the table in the Background section of this assessment. Pursuant to 40 CFR 50.14(c)(3)(iii)(C), the "Historical Distribution" Table in Figure 1 has been included to demonstrate that the event is associated with measured concentrations in excess of normal historical fluctuations, including background (i.e., concentrations greater than the 95<sup>th</sup> percentile). Monitors with readings greater than that of the NAAQS on January 5, 2007, which should be flagged, include the Yuma Supersite and Mexico Supersite monitors. One possible explanation for the discrepancy between the concentrations measured at the Yuma Courthouse and Yuma Supersite may be attributed to local differences in the surrounding environments. The Yuma Supersite monitor is located

closer to the ground and just south of a dirt lot while the Yuma Courthouse monitor is located on the roof of a large building that is surrounded by grass.

4. Examine the meteorological conditions before and during the event. The AzMET meteorological data are summarized in Figure 1. The wind data are highlighted yellow if the max wind speed in the hour exceeds 15 mph and orange if it exceeds 25 mph. On January 5<sup>th</sup>, 2007 an intense low pressure system caused strong, gusty northerly winds over portions of eastern Arizona including the Yuma area. As a result, elevated PM<sub>10</sub> values occurred in Yuma and nearby areas in the southwestern portion of Arizona. In Yuma, hourly wind gusts monitored by AzMET and NWS stations remained above 20 to 25 mph in the early morning, followed by a period of lighter winds during the late morning hours, and then strengthened throughout the remainder of the day.

5. Perform a qualitative attribution to emission source(s). All evidence indicates the elevated PM<sub>10</sub> concentrations in the Yuma area can be attributed to soil emissions that were transported over a broad area in southwestern Arizona. No source-specific emission allocation is possible based on the data available for analysis. The hourly concentration data do not show any significant source other than the wind-blown dust event occurring on January 5<sup>th</sup>. Observational reports of haze and blowing dust from trained officials in Yuma, Imperial, and El Centro are further evidence that elevated PM<sub>10</sub> concentrations were due to soil emissions.

6. Estimation of Contribution from Source or Event. The primary source appears to be wind-blown dust over a wide geographic region for which there is not an effective or efficient method to estimate the relative contributions from specific sources. The demonstration analysis contained in this report establishes the linkage between the measurements to be flagged and the event, thus satisfying the requirement in 40 CFR 50.14(c)(3)(iii)(B). Pursuant to 40 CFR 50.14(c)(3)(iii)(D), the "Event Contrib. Analysis" Table in Figure 1 has been included to demonstrate that there would have been no exceedances or violations but for the event (i.e., the contribution during the event overwhelmed the 24-hour averages).

7. Determination that a Natural or Exceptional Event Contributed To an Exceedance. Based on this analysis, the event satisfies the requirement in 40 CFR 50.1(j) that the elevated concentrations at the Yuma and Mexico Supersites were attributed to a natural event.

## Conclusion

Long-range transport of dust from soils. The region wide elevated PM<sub>10</sub> event on January 5, 2007 in Yuma was the result of transported dust and soils from high winds that suspended natural soils and soils from areas where Best Available Control Measures are in place and should be

flagged for air quality planning purposes. The "high wind" flag (A or RJ) should be applied to the monitor readings indicated in the table at the beginning of this report, as the monitors would have been below the NAAQS, but for the contribution of the event.



Janet Napolitano, Governor  
Stephen A. Owens, ADEQ Director

## YUMA AND VICINITY DUST CONTROL ACTION FORECAST ISSUED THURSDAY JAN. 4, 2007

Three-day weather outlook:

A strong trough of low pressure will rake through Arizona Friday, producing very strong winds from the north along the Colorado River region Friday. Some locations, including the Yuma forecast area may see gusts reach 50 mph. By Saturday morning, the trough will be in western New Mexico, and somewhat weaker winds will prevail across Arizona. Desert afternoon temperatures will be around 60°F Friday and Saturday, warming each day thereafter through the middle of next week under high pressure. The risk of wind-blown dust in Yuma will be "HIGH" on Friday, decreasing to "Moderate" Saturday and Sunday.

	<u>WINDS</u>	<u>WIND BLOWN DUST RISK</u>
Day #1: Fri 01/05/2007	Northwest winds 15-25 mph are expected early, becoming north 25-35 mph during the afternoon hours with stronger gusts possible.	<b>HIGH</b>
Day #2: Sat 01/06/2007	North winds 15-25 mph are expected much of the day.	<b>MODERATE</b>
Day #3: Sun 01/07/2007	North winds 10-20 mph are likely much of the day.	<b>MODERATE</b>

### PM-10 & PM-2.5 (PARTICLES)

Description – The term "particulate matter" (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers in diameter tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are referred to as "fine" particles and are responsible for many visibility degradations (brown cloud). Particles with diameters between 2.5 and 10 micrometers are referred to as "coarse".

Sources – Fine = All types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Coarse = crushing or grinding operations and dust from paved or unpaved roads.

Potential health impacts – PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.

Units of measurement – Micrograms per cubic meter (ug/m3)

Averaging interval – 24 hours (midnight to midnight).

Reduction tips – Stabilize loose soils, minimize travel on dirt roads, utilize tarps on haul trucks, limit use of leaf-blowers, and on high-wind days reduce outdoor activities.

CKR 05/09/2005

U.S. Department of Commerce  
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL  
CLIMATOLOGICAL DATA  
(final)  
HOURLY OBSERVATIONS TABLE  
NAF (23199)  
EL CENTRO , CA  
(01/2007)**

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801

Elevation: -43 ft. below sea level

Latitude: 32.817

Longitude: -115.667

Data Version: VER3

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
05	0056	5	FEW070 BKN090	10.00		61	16.1	52	11.2	44	6.7	54	24	230	28	29.90	6	005	29.91	AA		29.86
05	0156	5	CLR	8.00		59	15.0	49	9.5	39	3.9	48	30	250	39	29.91			29.91	AA		29.87
05	0256	5	CLR	10.00		57	13.9	47	8.4	36	2.2	46	15	270		29.92			29.93	AA		29.88
05	0356	5	CLR	10.00		56	13.3	45	7.3	32	0.0	40	22	250	28	29.93	1	009	29.93	AA		29.89
05	0456	5	FEW080	10.00		53	11.7	44	6.7	33	0.6	47	14	250		29.95			29.96	AA		29.91
05	0556	5	BKN075 OVC090	10.00		53	11.7	45	7.1	35	1.7	51	10	290		29.98			29.99	AA		29.94
05	0656	5	OVC090	10.00		54	12.2	46	8.0	38	3.3	55	11	270		30.00	1	025	30.01	AA		29.96
05	0756	5	M	10.00		54	12.2	47	8.5	40	4.4	59	8	300		30.04			30.04	AA		30.00
05	0856	5	FEW120	10.00		61	16.1	47	8.5	31	-0.6	32	15	350		30.07			30.08	AA		30.03
05	0903	5	FEW120	10.00		61	16.0	46	7.9	28	-2.0	29	17	350	23	30.07			M	SP		30.03
05	0956	5	CLR	7.00		62	16.7	46	7.6	24	-4.4	23	30	350	37	30.08	1	028	30.09	AA		30.04
05	1056	5	CLR	4.00	HZ	63	17.2	45	7.2	19	-7.2	18	29	350	36	30.09			30.09	AA		30.05
05	1115	5	SCT080	3.00	BLDU	63	17.2	45	7.2	19	-7.2	18	28	350	34	30.08			30.04	SP		30.04
05	1156	5	CLR	3.00	HZ	63	17.2	44	6.7	15	-9.4	15	30	350	39	30.07			30.08	AA		30.03
05	1224	5	SCT013	1.75	HZ	63	17.0	44	6.4	12	-11.0	13	32	350	39	30.06			M	SP		30.02
05	1235	5	VV011	1.00	HZ	63	17.0	44	6.4	12	-11.0	13	30	350	43	30.06			M	SP		30.02
05	1240	5	SCT080	0.25s	BLDU's	63	17.0	44	6.4	12	-11.0	13	34	350	43	30.05			30.01	SP		30.01
05	1256	5	SCT011	2.50	HZ	64	17.8	44	6.7	13	-10.6	14	32	350	38	30.07	8	006	30.07	AA		30.03
05	1316	5	SCT013	1.50	HZ	63	17.0	44	6.4	12	-11.0	13	33	350	41	30.07			M	SP		30.03
05	1330	5	FEW013	2.00	HZ	63	17.0	44	6.4	12	-11.0	13	37	340	43	30.08			M	SP		30.04
05	1346	5	CLR	3.00	HZ	63	17.0	44	6.4	12	-11.0	13	34	350	41	30.09			M	SP		30.05
05	1356	5	CLR	4.00	HZ	63	17.2	43	6.3	11	-11.7	13	30	350	41	30.09			30.10	AA		30.05
05	1456	5	CLR	6.00	HZ	62	16.7	42	5.7	8	-13.3	12	30	340	37	30.13			30.14	AA		30.09
05	1556	5	CLR	8.00		60	15.6	41	5.1	7	-13.9	12	24	350	38	30.16	3	031	30.16	AA		30.12
05	1656	5	CLR	10.00		57	13.9	40	4.3	8	-13.3	14	23	330		30.19			30.20	AA		30.15
05	1756	5	CLR	10.00		54	12.2	39	4.0	14	-10.0	20	17	320		30.22			30.22	AA		30.18
05	1856	5	CLR	10.00		52	11.1	38	3.3	13	-10.6	21	13	300		30.25	1	029	30.25	AA		30.21
05	1956	5	CLR	10.00		53	11.7	37	2.9	6	-14.4	15	23	320	30	30.28			30.28	AA		30.24
05	2056	5	CLR	10.00		51	10.6	36	2.4	7	-13.9	17	17	320		30.30			30.30	AA		30.26
05	2156	5	CLR	10.00		50	10.0	36	2.2	8	-13.3	18	11	300		30.33	1	027	30.33	AA		30.29
05	2256	5	CLR	10.00		50	10.0	36	2.1	7	-13.9	17	13	300		30.34			30.34	AA		30.30
05	2356	5	CLR	10.00		50	10.0	36	2.4	10	-12.2	20	20	350	24	30.33			30.33	AA		30.29

Dynamically generated Mon Oct 29 12:19:27 EST 2007 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce  
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL  
CLIMATOLOGICAL DATA  
(final)  
HOURLY OBSERVATIONS TABLE  
IMPERIAL COUNTY AIRPORT (03144)  
IMPERIAL , CA  
(01/2007)**

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801

Elevation: -59 ft. below sea level

Latitude: 32.834

Longitude: -115.579

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
05	0053	12	CLR	10.00		62	16.7	53	11.5	44	6.7	52	24	240	32	29.89	6	017	29.83	AA		29.83
05	0153	12	CLR	10.00		59	15.0	50	10.0	41	5.0	51	20	250	28	29.91			29.85	AA		29.85
05	0253	12	FEW070	10.00		58	14.4	48	8.9	37	2.8	46	16	270	22	29.95			29.89	AA		29.89
05	0353	12	CLR	10.00		55	12.8	45	7.2	33	0.6	43	20	250	25	29.94	0	017	29.88	AA		29.88
05	0453	12	CLR	10.00		53	11.7	44	6.7	33	0.6	47	13	250	23	29.96			29.90	AA		29.90
05	0553	12	BKN075 OVC090	10.00		53	11.7	44	6.9	34	1.1	49	11	300		29.99			29.93	AA		29.93
05	0653	12	SCT085 BKN110	10.00		55	12.8	46	7.6	35	1.7	47	9	300		30.01	1	025	29.95	AA		29.95
05	0753	12	BKN110	10.00		56	13.3	48	8.8	39	3.9	53	11	280		30.05			29.99	AA		29.99
05	0853	12	FEW120	10.00		60	15.6	48	8.8	34	1.1	38	11	330	18	30.08			30.02	AA		30.02
05	0953	12	CLR	5.00	HZ	61	16.1	45	7.3	24	-4.4	24	25	350	36	30.10	1	029	30.03	AA		30.04
05	1051	12	CLR	2.00	HZ	63	17.0	46	8.0	25	-4.0	24	28	340	37	30.09			M	SP		30.03
05	1053	12	CLR	2.00	HZ	62	16.7	46	7.7	25	-3.9	24	29	340	39	30.09			30.03	AA		30.03
05	1058	12	FEW005	1.75	HZ	63	17.0	46	8.0	25	-4.0	24	28	330	39	30.09			M	SP		30.03
05	1108	12	FEW005	2.00	HZ	63	17.0	46	8.0	25	-4.0	24	25	340	43	30.09			M	SP		30.03
05	1136	12	CLR	3.00	HZ	63	17.0	45	7.4	21	-6.0	20	25	340	39	30.09			M	SP		30.03
05	1142	12	FEW006	2.50	HZ	63	17.0	46	7.7	23	-5.0	22	28	340	39	30.08			M	SP		30.02
05	1151	12	FEW006	1.75	-RA	63	17.0	45	7.4	21	-6.0	20	31	340	40	30.08			M	SP		30.02
05	1153	12	FEW006	1.75	-RA	63	17.2	45	7.4	21	-6.1	20	29	330	40	30.08			30.02	AA	T	30.02
05	1204	12	SCT006	1.25	-RA	63	17.0	45	7.2	19	-7.0	18	31	330	40	30.08			M	SP		30.02
05	1213	12	SCT006	2.00	HZ	63	17.0	45	7.2	19	-7.0	18	29	340	39	30.07			M	SP		30.01
05	1222	12	BKN008 BKN035	1.75	HZ	63	17.0	45	7.2	19	-7.0	18	31	330	43	30.07			M	SP		30.01
05	1233	12	VV007	0.75	HZ	63	17.0	45	7.0	18	-8.0	17	32	340	43	30.07			M	SP		30.01
05	1247	12	VV005	1.00	HZ	63	17.0	45	7.0	18	-8.0	17	29	330	43	30.08			M	SP		30.02
05	1251	12	BKN005	1.50	HZ	63	17.0	44	6.8	16	-9.0	16	30	330	40	30.08			M	SP		30.02
05	1253	12	BKN005	2.00	HZ	63	17.2	45	6.9	17	-8.3	17	29	330	40	30.08	7	007	30.01	AA	T	30.02
05	1311	12	FEW007	2.50	HZ	63	17.0	45	7.2	19	-7.0	18	23	330	44	30.08			M	SP		30.02
05	1320	12	FEW007	3.00	HZ	63	17.0	45	7.0	18	-8.0	17	26	330	40	30.09			M	SP		30.03
05	1353	12	CLR	6.00	HZ	63	17.2	45	7.0	18	-7.8	17	26	340	37	30.10			30.04	AA		30.04
05	1453	12	CLR	8.00		62	16.7	44	6.9	19	-7.2	19	26	330	36	30.14			30.08	AA		30.08
05	1553	12	CLR	10.00		60	15.6	44	6.3	19	-7.2	20	17	330	30	30.17	3	032	30.11	AA		30.11
05	1653	12	CLR	10.00		56	13.3	42	5.6	22	-5.6	27	14	330		30.20			30.14	AA		30.14
05	1753	12	CLR	10.00		54	12.2	41	4.8	20	-6.7	26	14	330		30.23			30.16	AA		30.17
05	1853	12	CLR	10.00		54	12.2	39	3.9	13	-10.6	19	16	330	23	30.25	1	026	30.19	AA		30.19
05	1953	12	CLR	10.00		52	11.1	38	3.4	14	-10.0	22	15	320	21	30.28			30.22	AA		30.22
05	2053	12	CLR	10.00		52	11.1	39	3.8	17	-8.3	25	13	330	21	30.30			30.24	AA		30.24
05	2153	12	CLR	10.00		51	10.6	39	3.6	18	-7.8	27	10	340		30.34	3	031	30.28	AA		30.28
05	2253	12	CLR	10.00		50	10.0	37	2.6	12	-11.1	22	8	320		30.34			30.28	AA		30.28
05	2353	12	CLR	10.00		50	10.0	37	2.5	11	-11.7	21	9	330	18	30.35			30.29	AA		30.29

Dynamically generated Mon Oct 29 12:25:20 EST 2007 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce  
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL  
CLIMATOLOGICAL DATA  
(final)  
HOURLY OBSERVATIONS TABLE  
YUMA MCAS (03145)  
YUMA , AZ  
(01/2007)**

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801

Elevation: 213 ft. above sea level

Latitude: 32.650

Longitude: -114.617

Data Version: VER3

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
05	0051	5	CLR	10.00		52	11.1	50	10.2	49	9.4	90	6	130		29.63			29.85	AA		29.86
05	0151	5	CLR	10.00		50	10.0	49	9.4	48	8.9	93	5	190		29.62	6	020	29.84	AA		29.85
05	0251	5	CLR	9.00		51	10.6	50	9.9	49	9.4	93	3	170		29.62			29.84	AA		29.85
05	0351	5	SCT065	10.00		52	11.1	50	10.2	49	9.4	90	3	VR		29.64			29.86	AA		29.87
05	0451	5	BKN060	10.00		53	11.7	50	9.9	47	8.3	80	10	260		29.64	0	006	29.86	AA		29.87
05	0551	5	BKN060 OVC070	5.00		56	13.3	46	7.5	33	0.6	42	22	300		29.65			29.87	AA		29.88
05	0651	5	CLR	10.00		53	11.7	44	6.6	33	0.6	47	17	290	25	29.68			29.90	AA		29.91
05	0751	5	CLR	10.00		52	11.1	44	6.4	33	0.6	49	7	280		29.69	3	017	29.91	AA		29.92
05	0851	5	CLR	10.00		52	11.1	44	6.6	34	1.1	50	11	300		29.72			29.94	AA		29.95
05	0951	5	FEW100	10.00		57	13.9	46	7.6	32	0.0	39	7	310		29.76			29.98	AA		29.99
05	1051	5	SCT100	10.00		60	15.6	46	7.6	28	-2.2	30	22	350	29	29.77	1	028	29.99	AA		30.00
05	1151	5	FEW100	10.00		62	16.7	46	7.8	26	-3.3	25	22	360	30	29.75			29.98	AA		29.98
05	1251	5	FEW100	10.00		63	17.2	45	7.4	21	-6.1	20	26	340	33	29.74			29.96	AA		29.97
05	1351	5	FEW200	10.00		64	17.8	45	7.4	19	-7.2	18	25	350	33	29.75	5	009	29.97	AA		29.98
05	1451	5	FEW200	10.00		64	17.8	45	7.0	16	-8.9	15	26	350	34	29.75			29.97	AA		29.98
05	1551	5	FEW200	10.00		63	17.2	44	6.5	14	-10.0	15	29	340	36	29.77			29.99	AA		30.00
05	1651	5	CLR	7.00		61	16.1	42	5.7	11	-11.7	14	22	330	33	29.80	3	020	30.03	AA		30.03
05	1751	5	CLR	9.00		59	15.0	41	4.9	9	-12.8	14	23	360	28	29.84			30.06	AA		30.07
05	1851	5	CLR	10.00	BLDU	57	13.9	40	4.4	10	-12.2	15	23	360	31	29.87			30.09	AA		30.10
05	1951	5	CLR	10.00	BLDU	55	12.8	39	3.7	9	-12.8	16	21	360	31	29.89	1	030	30.11	AA		30.12
05	2051	5	CLR	10.00	BLDU	54	12.2	38	3.3	8	-13.3	16	29	340	36	29.91			30.13	AA		30.14
05	2151	5	CLR	9.00	BLDU	53	11.7	38	3.0	8	-13.3	16	25	350	34	29.93			30.15	AA		30.16
05	2251	5	CLR	4.00	BLDU	53	11.7	38	3.0	8	-13.3	16	22	350	33	29.96	3	021	30.18	AA		30.19
05	2351	5	CLR	8.00	BLDU	52	11.1	37	2.6	7	-13.9	16	31	360	37	29.97			30.19	AA		30.20

Dynamically generated Mon Oct 29 12:51:29 EST 2007 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>